

REMARKS

The Final Office Action dated June 13, 2006 has been carefully considered. Claims 1 and 4 have been amended. Claims 1, 2 and 4 are in this application.

The previously presented claims were rejected under 35 U.S.C. § 103 as obvious in view of previously presented U.S. Patent No. 3,904,652 to Frank in combination with U.S. Patent No. 3,366,648 to Kerr. Applicants respectfully submit that the teachings of these references do not teach or suggest the invention defined by the present claims.

Claim 1 has been amended to more specifically define the limiting oxygen concentration. Support for this amendment is found throughout the specification and in particular on page 11, lines 8-10. No new matter has been added.

The Examiner states that Frank teaches a low oxygen concentration so as to avoid the flammable limit of the system. Furthermore, the claim did not specify what the limiting concentration can be for the process; therefore, it is plausible to the skilled artisan to assure that Frank's combination of oxygen is not less than the limiting oxygen concentration.

Applicants have amended the claims to recite that the limiting oxygen concentration corresponds to the lowest concentration of oxygen forming an explosion range. The claims of the present invention recite that during start up of the reactor, the concentration of oxygen is not less than the limiting oxygen concentration and accordingly is not less than the flammable limit or explosion range. In contrast, as noted by the Examiner, Frank teaches that the oxygen concentration is less than the flammable limit. It is only in hindsight that the Examiner can suggest that it is plausible to assume that Frank's concentration of oxygen is not less than the limiting concentration of oxygen. Applicants submit that it has surprisingly been found that it is possible to decrease the amount of diluting gas to be used and the amount of energy used for adjusting the diluting gas and shorten the duration of the operation of starting up the reactor as well by using a concentration of oxygen which is not less than the oxygen limiting concentration. In the previous Office Action, the Examiner stated it is possible to the skilled in the art to assume that the Frank's concentration of oxygen is less than the limiting oxygen concentration (see page 6, lines 15-18 of the Office Action dated

December 29, 2005). Accordingly, the Examiner's position is inconsistent and is determined in hindsight of the present invention.

As shown in comparative Example 1, if the concentration of oxygen is kept at least less than the limiting oxygen concentration the amount of steam consumed was 23.1 tons and the duration of the starting up of the reactor was about 7 hours. In contrast, if the concentration of oxygen is not less than the limiting oxygen concentration as shown in Example 1, the amount of steam consumed was 2.5 and the duration of starting up the reactor was 2.5 hours. Accordingly, the present invention enables a reactor to be started up stably, economically and promptly while retaining the safety of the reactor. There is no teaching of this feature in Frank.

The Examiner stated that Applicants have indicated that Kerr teaches the steady state of the claimed process; Kerr has pointed out that in order to avoid explosive hazards 1.0 to 1.5 mole % of the monoolefin is recommended for optimum yield of the product.

However, in contrast to the invention defined by the present claims, Kerr does not teach or suggest the invention defined by the present claims that oxygen concentration is not less than the limiting oxygen concentration corresponding to the lowest concentration of oxygen forming an explosion range. Kerr only discloses a technique to improve safety by utilizing a lot of diluting gas, which is wasteful and very expensive in view of the present invention. The feature of the concentration of oxygen in accordance with the present invention resides in passing a range during starting up of the reactor in which the concentration of the raw material is less than the concentration of the lower explosion limit of the raw material and the concentration of oxygen is not less than the limiting oxygen concentration (excluding 0% of concentration of oxygen). However, neither Frank nor Kerr teach this feature. Rather, Frank's and Kerr's disclosure corresponds to prior art. Therefore, even if Frank is combined with Kerr, it suggests only a method for controlling the concentration of oxygen below the lower explosion limit.

In addition, both references do not disclose or suggest how to start up a reactor, especially by causing a raw material to be oxidized and a molecular oxygen-containing gas to pass a range in which the concentration of the raw material is less than the concentration of

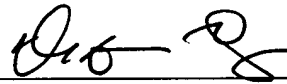
the lower explosion limit of the raw material and the concentration of oxygen is not less than the limiting oxygen concentration, but excluding the concentration of said raw material of 0 vol. %, and ii) then for reaching steady state causing a range in which the concentration of the raw material is less than the concentration of the lower explosion limit of the raw material and the concentration of oxygen is less than the limiting oxygen concentration, thereby reaching the steady state.

Accordingly, the invention defined by the present claims is not obvious in view of Frank in combination with Kerr.

The application is now believed to be in a condition for allowance and an early notification thereof is respectfully requested. If the Amendment does not place the case in condition for allowance, Applicant requests that the Examiner contact the undersigned. It is believed no fee is required. The Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 13-2165.

Respectfully submitted,

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